

# BELOW THE SURFACE, KALKASKA SAND SHINES

It's easy to love state symbols that are plants, animals, stones or fossils. But soil?

"That's the problem — most people think soil is dirt," said Del Mokma, a soil scientist at Michigan State University.

"They don't appreciate the differences."

Mokma does. He's crazy about dirt — er, soil — which includes gravel, sand, silt and clay. So the Yak asked Mokma to show him some Kalkaska sand — and help him appreciate Michigan's least-loved state symbol.

Mokma took him to Hartwick Pines State Park to see a pit that two other soil lovers had dug in a quiet, needle-strewn pine forest. At first sight, the three-foot-deep hole looked a little creepy. But the Yak was soon mesmerized by the sand inside.

It looked a lot different from the stuff found at Michigan beaches and sand dunes. That sand is pretty much one color — golden.

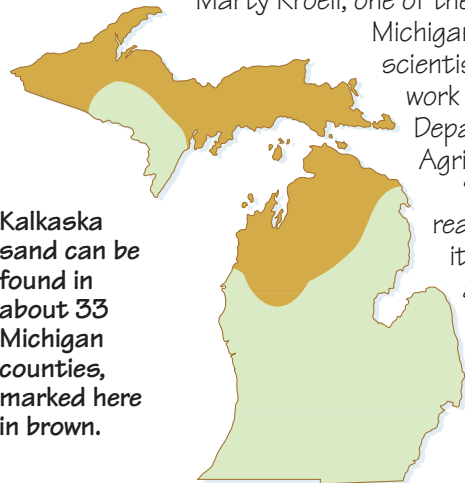
This sand was multi-colored; it looked like a sand painting — as dark as a lion's mane near the surface, increasingly lighter as the eye traveled downward.

"At time zero — right after the glaciers left 12,000 years ago — we had material like this at the surface," said Mokma, pointing to the lightest sand at the bottom.

"It was sand — light golden in color because there was iron in the sand grains."

After the glacial waters receded, plants and trees grew and dropped leaves and needles to the forest floor. The plant material decomposed, producing carbon and acids that reacted with minerals in the sand. The mix moved into the subsoil, producing the dark lion's mane, which is why Kalkaska sand is easily distinguished from say, Rubicon, another kind of sand in the park.

"We think Kalkaska sand is very, very beautiful," said Marty Kroell, one of the two other



Michigan soil scientists, who both work for the U.S. Department of Agriculture.

"That's one reason we picked it — for eye appeal."

And the sand, which



Soil scientist Del Mokma shows the Yak one of nature's most beautiful sand paintings.

PHOTOS BY MARY SCHROEDER

was first identified in 1927 in Kalkaska County, can be found in about 33 counties in both the Upper and Lower Peninsulas. How many kinds of soil are there in Michigan? About 500, probably more than half of them sand, and new soils could still be found, said Mokma.

"There's a story behind every one of them," he said. "In the world, we've divided soils into 12 orders, or groups, and Michigan has six. To have half of the world's major kinds of soil is quite unique."

The Kalkaska sand at Hartwick Pines reaches at least 15 feet below ground and possibly twice that far, said Kroell.

Sand untouched by time. What a lovely state symbol.

By Patricia Chargot

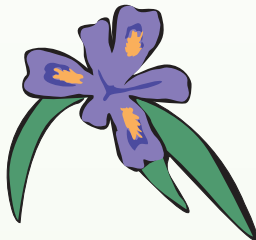


Soil scientist Marty Kroell shovels up some Kalkaska sand.

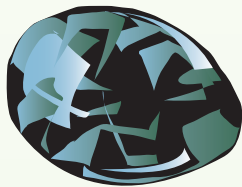


**State Flag:**  
Michigan's third since becoming a state, adopted in 1911.

**State Coat of Arms:**  
Adopted in 1911  
It's on the flag.



**State Wildflower:**  
Dwarf Lake Iris  
Named in 1998



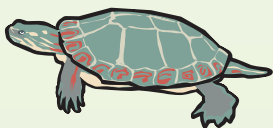
**State Gem:**  
Greenstone  
(Chlorastrolite)  
Named in 1972



**State Tree:**  
White Pine  
Named in 1955



**State Soil:**  
Kalkaska Sand  
Named in 1990



**State Reptile:**  
Painted Turtle  
Named in 1995 after a campaign led by a group of Niles fifth-graders